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| INFORMATION DISCLOSURE | Application Number | Continuation of 08/548,840 |
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| | Filing Date | June 12, 2000 |
| | First Named Inventor | David P. Martin |
| | Group Art Unit | 1687 |
| | Examiner Name | IM LUGA |

Attorney Docket Number

| | U.S. PATENT DOCUMENTS | | | | | | | |
|-----------------------|--------------------------|---|-------------------|---|--|--|--|--|
| Examiner Initials* | Cite No. ¹ | US Patent Documer Number Kind Coc (if know | of Cited Document | Date of Cited Document MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | | | |
| 1478 | | 5,229,279 | Peoples, et al. | 07-20-1993 | The state of the s | | | |
| φ | | 5,245,023 | Peoples, et al. | 09-14-1993 | | | | |
| | | 5,250,430 | Peoples, et al. | 10-05-1993 | | | | |
| 146 | | 5,821,299 | Noda | 10-13-1998 | | | | |

| | | | | | FOREIGN PATENT DOCUMENT | TS | | |
|-----------------------|--------------|----------|----------|--------------------------|--|--|---|----------------|
| Examiner Initials* | Cite No.¹ | | | ument | Name of Patentee or Applicant of Cited Document | Date of Publication of Cited Document MM-DD-YYYY | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T ⁶ |
| | | Office.3 | Number⁴ | Kind Code⁵ (if known) | | | . | |
| 2486 | | wo | 91/00917 | | Massachusetts Institute of Technology | 01-24-1991 | | |
| | | wo | 92/19747 | | Imperial Chemical Industries, PLC | 11-12-1992 | | |
| | | wo | 93/02187 | | Michigan State University | 02-04-1993 | | |
| | | wo | 93/02194 | | Imperial Chemical Industries, PLC | 02-04-1993 | | |
| | | wo | 93/11656 | | Firmenich, S.A. | 06-10-1993 | *** | |
| | | wo | 94/07940 | | Zeneca Limited | 04-14-1994 | | |
| | | wo | 94/11519 | | Zeneca Limited | 05-26-1994 | | |
| | | wo | 94/12014 | | Agracetus, Inc. | 06-09-1994 | | |
| | | WO | 94/23027 | | Zeneca Limited | 10-13-1994 | | 1 |
| 1 | | wo | 94/26917 | | Zeneca Limited | 11-24-1994 | | |
| | | wo | 95/05472 | | Michigan State University | 02-23-1995 | | |
| 7 | | wo | 96/03468 | | Imperial Chemical Industries, PLC | 02-08-1995 | | |
| SRD. | | wo | 96/06179 | | Zeneca Limited | 02-29-1996 | | |

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¹ Unique citation designation number 2 See attached Kinds of U.S. Patent Documents. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6 Applicant to place a check mark here if English language Translation is attached.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number Substitute for form 1449A/PTO Complete if Known Application Number **INFORMATION DISCLOSURE** Continuation of 08/548,840 STATEMENT BY APPLICANT (use as many sheets as necessary) Filing Date June 12, 2000 David P. Martin First Named Inventor Group Art Unit 1601 Examiner Name Sheet of 5 Attorney Docket Number MBX 012 CON

| | | OTUED ART. MON RATE TO THE PROPERTY OF THE PRO | |
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| | - | OTHER ART NON PATENT LITERATURE DOCUMENTS | |
| Examiner's Initials* | Cite No. ¹ | item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published | T² |
| 84 | | BYROM, "Miscellaneous Biomaterials", in <u>Biomaterials</u> , (D. Byrom, ed.) Chapter 8, pp. 333-59, (MacMillan Publishers, London, 1991). | |
| | | CARR, "Processing of Oilseed Crops," Oil Crops of the World, (Röbblen, et al., eds.) Chapter 11, pp. 226-59 (McGraw-Hill Publishing Company, 1989). | |
| | | DE SMET, et al., "Characterization of Intracellular Inclusions Formed by <i>Pseudomonas olevorans</i> During Growth on Octane," <i>J. Bacteriol.</i> 154(1):870-78 (1983). | |
| | | GASSER, et al., "Genetically Engineering Plants for Crop Improvement," Science 244:1293-99 (1989). | |
| | | *GRIEBEL, et al., "Metabolism of Poly-β- hydroxybutyrate. I. Purification, Composition, and Properties of Native Poly-β-hydroxybutyrate granules from <i>Bacillus megaterium</i> ," <i>Biochemistry</i> 7:3676-81 (1968). | |
| | | GRIESBECK, et al., "Einfache Umwandlung von ()-(R)-3-Hydroxybuttersäure in das (+)-(S)-Enantiomere und dessen Lacton ()-(S)-4-Methyloxetan-2-on," <i>Helv. Chim. Acta</i> 70:1320-25 (1987). | |
| | | HOCKING, et al., "Biopolyesters," <u>Chemistry and Technology of Biodegradable Polymers</u> , (Griffin, ed.) Chapter 4, pp. 48-96, (Chapman and Hall, London, 1994). | |
| | | HOLMES, "Biologically Produced (R)-3-hydroxyalkanoate Polymers and Copolymers," <u>Developments in Crystalline Polymers</u> , (Bassett, ed.) Vol. 1, pp. 1-65 (Elsevier, London, 1988). | |
| | | LAFFERTY, et al., "Microbial Production of Poly-β-Hydroxybutyric Acid," <u>Biotechnology</u> , (Rehm, et al., eds.) Chapter 6, pp. 135-76 (Verlagsgesellschaft, Weinheim, 1988). | _ |
| W | | *LAW & SLEPECKY, "Assay of poly-β-hydroxybutyric acid," <i>J. Bacteriol.</i> 82:33-36 (1961). | |

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Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

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| | | | | Filing Date | June 12, 2000 | | |
| | | | | First Named Inventor | David P. Martin | | |
| | | | | Group Art Unit | 1657 | | |
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| | | OTHER ART NON PATENT LITERATURE DOCUMENTS | |
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| xaminer's | Cite | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the | T: |
| Initials* | No.1 | item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), | |
| | | publisher, city and/or country where published | |
| ν | | LEMOIGNE, et al., "Fermentation β-Hydroxybutyrique," <i>Annales des Fermentations</i> 5:527-36 (1925). | |
| | | LIEBERSGESELL, et al., "Cloning and nucleotide sequences of genes relevant for biosynthesis of poly(3-hydroxybutyric acid) in <i>Chromatium vinosum</i> strain D," <i>European J. Biochem</i> . 209:135-50 (1992). | |
| | | LIEBERSGESELL, et al., "Cloning and molecular analysis of the poly(3-hydroxybutyric acid) biosynthetic genes of <i>Thiocystis violacea</i> ," <i>Appl. Microbiol. Biotechnol.</i> 38:493-501 (1993). | |
| | | MÜLLER, et al., "Poly(hydroxyalkanoates): A Fifth Class of Physiologically Important Organic Biopolymers?" <i>Angew. Chem. Int. Ed. Engl.</i> 32:477-502 (1993). | |
| | | NAWRATH, et al., "Targeting of the polyhydroxybutyrate biosynthetic pathway to the plastids of <i>Arabidopsis thaliana</i> results in high levels of polymer accumulation," <i>Proc. Natl. Acad. Sci. USA</i> 91:12760-64 (1994). | |
| | | PEOPLES, et al. "Biosynthetic Thiolase from Zoogloea ramigera," J. Biol. Chem. 262(1):97-102 (1987). | |
| | | PEOPLES, et al., "Fine structural analysis of the <i>Zoogloea ramigera phbA-phbB</i> locus encoding β-ketothiolase and acetoacetyl-CoA reductase: nucleotide sequence of <i>phbB</i> ," <i>Molecular Microbiol</i> . 3(3):349-57 (1989). | |
| | | PEOPLES, et al., "Poly-β-hydroxybutryte (PHB) Biosynthesis in <i>Alcaligenes eutrophus</i> H16," <i>J. Biol. Chem.</i> 264(26):15298-303 (1989). | |
| | | PEOPLES, et al., "Poly-β-hydroxybutyrate Biosynthesis in <i>Alcaligenes eutrophus</i> H16: Characterization of the Genes Encoding β-Ketothiolase and Acetoacetyl-CoA Reductase," <i>J. Biol. Chem.</i> 264(26):15293-97 (1989). | |
| w | | PEOPLES, et al., "Polyhydroxybutyrate (PHB): A Model System for Biopolymer Engineering," <i>Prog. Biotechnol.</i> 3:51-56 (1987). | |

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| INFORMATION DISCLOSURE | | | | Complete if Known | | | |
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| | | OTHER ART NON PATENT LITERATURE DOCUMENTS | |
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| Examiner's Cit Initials* No | | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published | T |
| W | | PLATTNER, et al., "Cyclisch Oligomere von(R)-3-Hydroxybuttersäuer: Herstellung und strukturelle Aspekte," Helv. Chim. Acta 76:2004-33 (1993). | |
| | | POIRIER, et al., "Polyhydroxybutyrate, a Biodegradable Thermoplastic, Produced in Transgenic Plants," <i>Science</i> 256:520-23 (1992). | |
| | | POIRIER, et al., "Production of Polyhydroxyalkanoates, a Family of Biodegradable Plastics and Elastomers, in Bacteria and Plants," <i>Bio/Technol.</i> 13:142-50 (1995). | |
| | | SALUNKHE, et al., eds., World Oilseeds: Chemistry, Technology, and Utilization, (Van Nostrand Reinhol, New York, 1992). | |
| | | SCHUBERT, et al., "Cloning of the <i>Alcaligense eutrophus</i> Genes for Synthesis of Poly-β-Hydroxybutyric Acid (PHB) and Synthesis of PHB in <i>Escherichia coli</i> ," <i>J. Bacteriol.</i> 170(12):5837-5847 (1988). | |
| | | SEEBACH, et al., "Biological-Chemical Preparation of 3-Hydroxycarboxylic Acids and Their Use in EPC-Synthesis," in Stereochemistry of Organic and Bioorganic Transformations, (Bartmann, et al., eds.) pp. 85-126 (VCH, Weinheim, 1987). | |
| | | SEEBACH, et al., "Direct Degradation of the Biopolymer PO Hydroxybutyric Acid to (R)-3-Hydroxybutanoic Methyl Ester," Org. Synth. 71:39-47 (1992). | |
| | | SEEBACH, et al., "Partial Depolymerization and Solubilization of Poly[(R)-3-hydroxybutanoate] (PHB) and Its Copolymer with (R)-3-Hydroxyvalerate (BIOPOL®) by Treatment with Li-Amides/LiCI in Tetrahydrofuran at Low Temperature," <i>Chimia</i> 44:112-116 (1990). | |
| | - | SEEBACH, et al., "Synthesis of Linear Oligomers of (R)-3-Hydroxybutyrate and Solid-State Structural Investigations by Electron Microscopy and X-Ray Scattering," <i>Helv. Chim. Acta</i> , 77:1099-1123 (1994). | |
| 201 | | SEEBACH, et al., "The Triolide of (<i>R</i>)-3-Hydroxybutric acidDirect Preparation from Polyhydroxybutyrate and Formation of a Crown Estercarbonyl Complex with Na Ions," <i>Angew. Chem. Int. Ed. Eng.</i> 31(4):434-435 (1992). | |

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| | | | | Group Art Unit | 1651 |
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| | | OTHER ART NON PATENT LITERATURE DOCUMENTS | |
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| M | | SLATER, et al., "Cloning and Expression in <i>Escherichia coli</i> of the <i>Alcaligenes eutrophus</i> H16 Poly-β-Hydroxybutyrate Biosynthetic Pathway," <i>J. Bacteriol.</i> 170(10):4431-4436 (1988). | |
| W/ | | STEINBÜCHEL, "Polyhydroxyalkanoic Acids," in <u>Biomaterials,</u> (Byrom, ed.) Chapter 3, pp. 123-213 (MacMillan Publishers, London, 1991). | |
| | | STEINBÜCHEL, et al. "Molecular basis for biosynthesis and accumulation of polyhyroxyalkanoic acids in bacteria," FEMS Microbiology Reviews 103:217-230 (1992). | |
| | - | WATSON, et al., eds., <u>Corn: Chemistry and Technology</u> , (American Association of Cereal Chemists Inc., St. Paul, Minnesota 1994). | - |
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